

## The South Pole Earthshine Project

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To further clarify the potential for characterizing extrasolar terrestrial planets by direct detection at visible wavelengths, as is planned for the Coronagraphic mission for Terrestrial Planet Finder (TPF-C), we describe here our proposed measurements of the dark side of the Moon from a telescope located at the South Pole. That is the only location from which we can view Earthshine (with the Sun well below the horizon) continuously for several days at a time to derive time-dependent, spatially-integrated Earth spectra similar in appearance to those of a distant extrasolar planet as viewed by TPF-C. At the South Pole we can use a single instrument to measure light from the rotating Earth over several days, eliminating the need to calibrate separate instruments at many longitudes under different air mass and weather conditions. The spectra to be collected may also assist in current investigations of Earth albedo variations, with their implications for climate change. This project should generate considerable public interest since both the experiment and its benefits are easy to understand.

